

## **ABSTRACT**

A regulated DC and/or AC power supply connected to an AC power source comprising an essentially loss free impedance followed by a controllable device that can sink essentially without losses a selected portion of the current from the essentially loss free impedance . The controllable device can, also essentially without loss, source current from its own internal storage so that the combined residual current can be made available to a load either as a regulated AC quasi square wave or, after rectification, as a regulated DC. A preferred embodiment is described in detail comprising a transformer with a considerable leakage inductance between its primary and secondary. An analog, alternatively a microprocessor-based controller, and a mosfet driver supply a mosfet rectifying bridge with proper gate voltages to obtain a regulated AC and/or DC output. In its simplest form the programmable device may be a generator with controllable phase and amplitude. In the preferred embodiment the mosfet rectifying bridge, having properly phased gate drives and an output storage capacitor, is able to both sink and source current whereby it can regulate its outputs AC and/or DC from zero to maximum. A solution is described to the problem of reducing any unwanted DC current in the transformer windings. A UPS version is described in the form of a push pull as well as a full rectifying bridge.